

ABSTRACT

The present invention provides an all-optical dynamic gain equalizer of an open-loop design using nonlinear optical materials for equalizing channel power without the need of complex electronics and close-loop control, and provides pulse reshaping and in some embodiments noise reduction at no extra cost. The invention achieves restoration of spectral power uniformity by employing nonlinear optical limiters with desirable power transfer function curves to each of the optical signals to be equalized. The invention provides the highly desirable functions of dynamic gain equalization, and optical pulse reshaping. Some embodiments constructed according to the invention provide signal dynamic range control by biasing the nonlinear optical limiter with a biasing optical signal.